



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Cibola National Wildlife Refuge Unit 1 Conservation Area

2011 Annual Report



April 2012

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
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City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
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Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
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Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

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Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
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Colorado River Commission of Nevada
Nevada Department of Wildlife
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Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

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Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy



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ACRONYMS AND ABBREVIATIONS

Cibola NWR	Cibola National Wildlife Refuge
HCP	Habitat Conservation Plan
LSC MSCP	Lower Colorado River Multi-Species Conservation Program
Reclamation	Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service

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BACKGROUND

Cibola National Wildlife Refuge (Cibola NWR) consists of about 16,600 acres of land located along approximately 12 miles of the lower Colorado River in Arizona and California. It was established in 1964 as a refuge and breeding ground for migratory birds and other wildlife. The refuge is divided into six management units known as Unit 1, Unit 2, Unit 3, Unit 4, Unit 5, and Unit 6 (figure 1).

Unit 1 is located on the northern end of the refuge in Arizona and encompasses approximately 4,100 acres, with approximately 1,000 acres dedicated to agriculture and 3,100 acres currently undeveloped. The Bureau of Reclamation (Reclamation) has previously partnered with the Cibola NWR and currently has a number of established projects at Unit 1, which include previous habitat creation projects as well as research and demonstration projects. In 1999, the U.S. Fish and Wildlife Service (USFWS) and Reclamation planted the Cibola Corn Field/Nature Trail and established 34 acres of cottonwood-willow and mesquite land cover type within Unit 1. In 2002, the USFWS and Reclamation planted approximately 18 acres of cottonwood-willow in Unit 1 north of the trail.

Six fields of approximately 20 acres each in Unit 1 have been set aside for the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) to conduct research and development projects. To date, four of the fields are occupied by three projects that have been fully or partially funded by the LCR MSCP and include Work Task E6: Cottonwood Genetics Study, Work Task E7: Mass Transplanting Demonstration, and Work Task E8: Seed Feasibility Study. To the east of these projects are an additional two agricultural fields that are still in agricultural production.

The Cibola NWR Unit 1 Conservation Area incorporates the aforementioned existing projects and agricultural land as well as additional adjacent acreage into a single conservation area. Figure 2 illustrates the current state of these lands as managed under the LCR MSCP. A Land Use Agreement was signed in 2007, securing the lands within this conservation area for the term of the program. Note that the CNWR Unit 1 Conservation Area (approximately 949 acres) only includes a portion of the total area designated as “Unit 1” by the Cibola NWR (about 4,100 acres).

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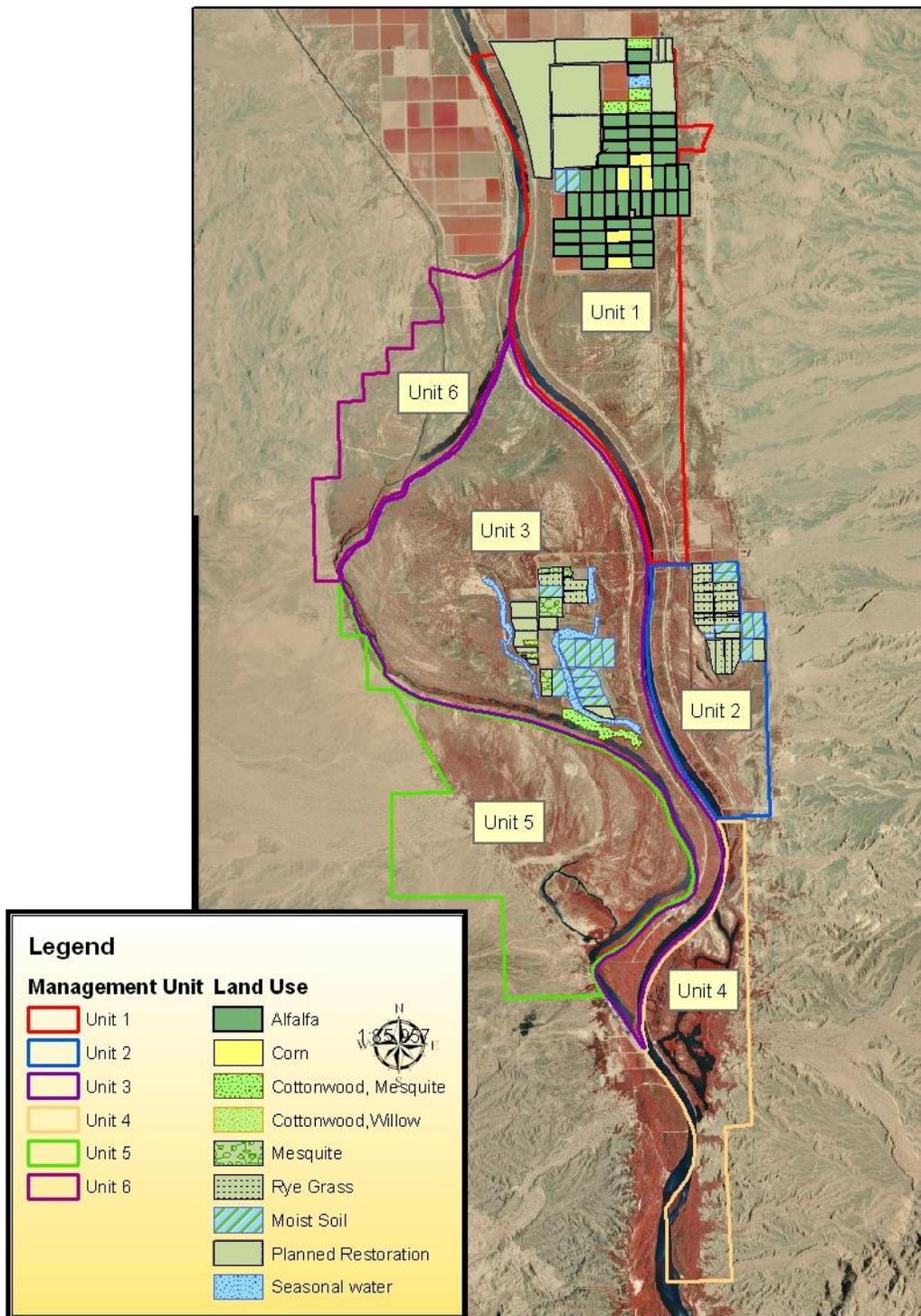


Figure 1.—The Cibola NWR's six management units.

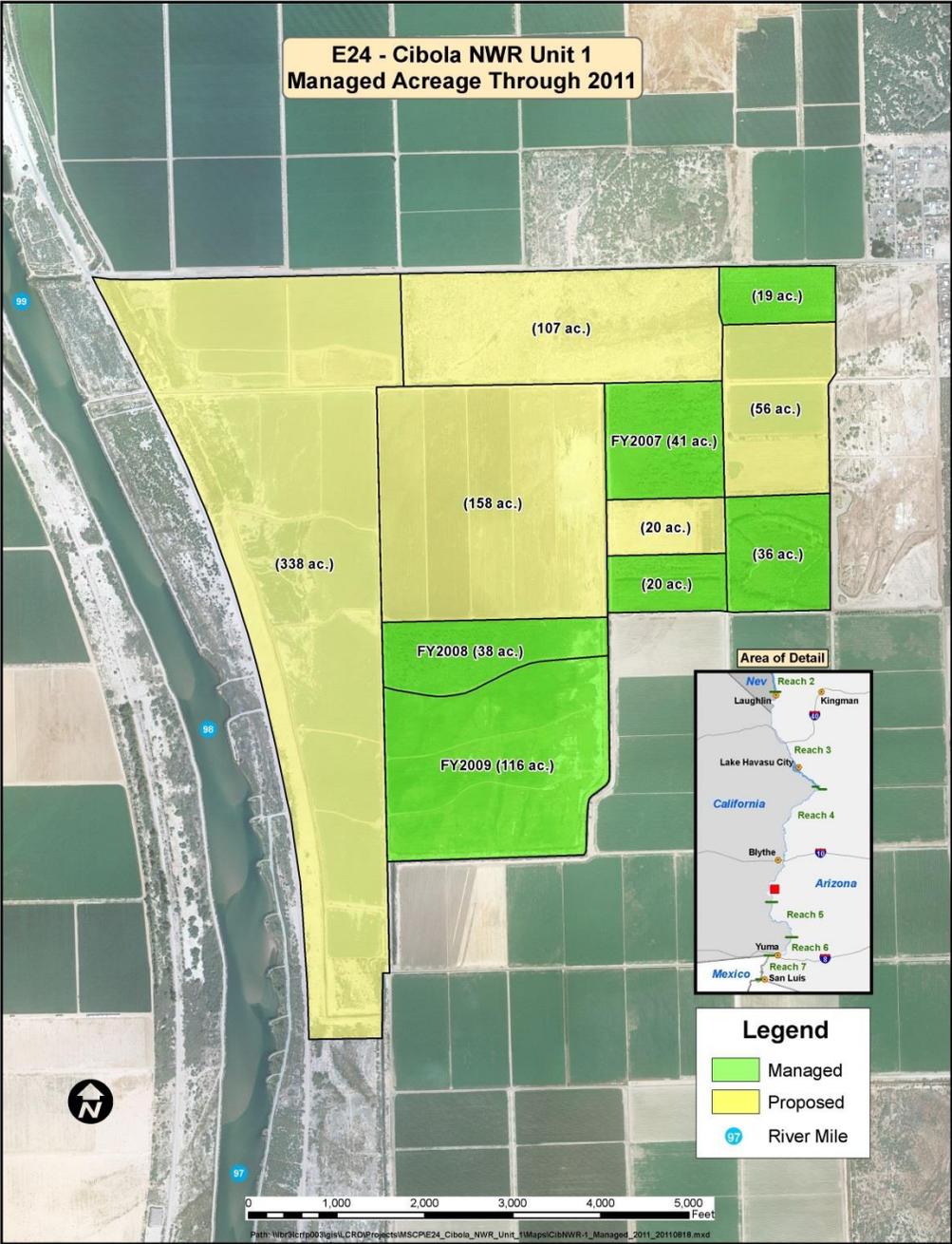


Figure 2.—The Cibola NWR Unit 1 Conservation Area.

1.0 CONSERVATION AREA INFORMATION

1.1 Purpose

Cottonwood-willow land cover created within Cibola National Wildlife Refuge (Cibola NWR) Unit 1 Conservation Area will be managed for the southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus occidentalis*), and other species covered under the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The creation of habitat includes both the establishment of native plants and the management of the vegetation and its structural type to meet management guidelines for integrating seral stages of vegetation, moist soil, standing water, and open areas into mosaics of riparian vegetation.

Large habitat restoration sites such as Cibola NWR Unit 1 Conservation Area are developed over a number of years, and the restoration activities are divided into phases. The Cibola NWR Unit 1 Conservation Area Restoration Development Plan: Overview (Reclamation 2007b) provides an overview of the restoration potential of the site as well as the projected phasing of development.

1.2 Location

The Cibola NWR Unit 1 Conservation Area consists of approximately 949 acres on the Cibola NWR, located in Arizona between River Miles 97 and 99 (figure 3). The initial partnership for management of the Cibola NWR Unit 1 Conservation Area includes the Bureau of Reclamation (Reclamation) and the U.S. Fish and Wildlife Service (USFWS), Cibola National Wildlife Refuge.

1.3 Land Ownership

The property is owned by the USFWS. They have dedicated land and water to develop and maintain native land cover types on the conservation area.

1.4 Water

Cibola NWR has 2nd priority water rights, which include a diversionary entitlement of 27,000 acre-feet per year and a consumptive use entitlement of (diversion minus return flow) of 16,793 acre-feet per year. The 900-acre Cibola NWR Unit 1 Conservation Area will have a maximum of 5,400 acre-feet per year (6 acre-feet per acre, per year) available when the conservation area has been fully developed.

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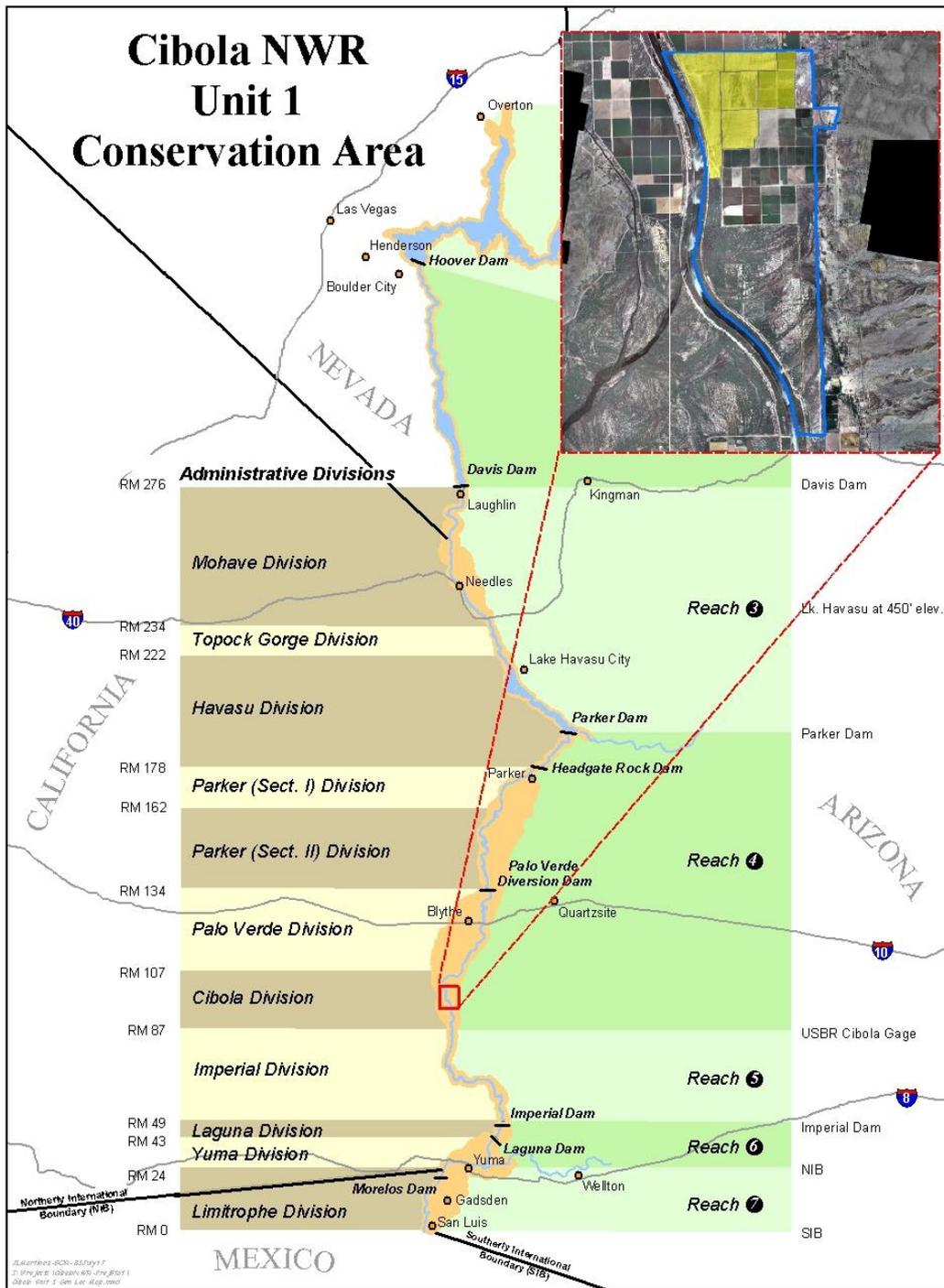


Figure 3.—Location of Cibola NWR Unit 1 Conservation Area.

1.5 Agreements

A Land Use Agreement for restoration activities was finalized in 2007 to secure the availability of land and water resources for the 50-year term of the LCR MSCP.

1.6 Public Use

The USFWS has the authority, and is the lead, to regulate hunting and recreation uses pursuant to USFWS statutes, regulations, and policies at the Cibola NWR. In cooperation with Reclamation, the USFWS coordinates its public use and related activities so they are consistent with and do not adversely affect restoration activities at the site.

1.7 Law Enforcement

The USFWS is responsible for law enforcement at the Cibola NWR. Reclamation continues to work with the USFWS to ensure these activities do not conflict with the LCR MSCP Habitat Conservation Plan (HCP).

1.8 Wildfire Management

A LCR MSCP Conservation Area Specific Fire Management and Law Enforcement Strategy was finalized for the Cibola NWR in January 2010 and is posted on our Web site. The LCR MSCP will continue to work with local State and Federal fire agencies to reduce the risk of wildland fires and maintain clear lines of communication among agencies.

2.0 HABITAT DEVELOPMENT AND MANAGEMENT

2.1 Planting

No additional riparian acreage has been established on the Cibola NWR Unit 1 Conservation Area since March 2009 when Crane Roost was planted. Due to variable success in establishment, additional planting phases have been temporarily postponed.

2.2 Irrigation

Flood irrigation was used to water the cover crops and saturate the soils at the appropriate seasons to leach the salts through the soil column and provide favorable conditions for future land cover establishment. The cottonwood-willow land cover type, when planted, will be irrigated in accordance with the schedule prepared by Reclamation.

2.3 Site Maintenance

Additional improvements across the conservation area included upgrades to the existing drainage infrastructure. By deepening and connecting the drains adjacent to the fields of the conservation area, more rapid soil salinity mitigation is anticipated (figure 4).



Figure 4.—Drain deepening and construction on Cibola NWR Unit 1.

2.4 Management of Created Land Cover and Habitat

To maintain healthy stands of trees and to promote growth, flood irrigation was also used on other previously established fields within the conservation area for regular watering. Additional measures were taken, as necessary, to maintain field borders, and herbicide and/or fertilizer were appropriately used when necessary.

2.5 Restoration Research and Demonstration

A number of long-term research and demonstration projects are ongoing on the Cibola NWR Unit 1 Conservation Area. The projects are described in greater detail in their respective technical reports. If available, research updates will be periodically presented in these annual reports for projects in this area.

3.0 MONITORING

All monitoring activities are part of larger monitoring projects for the LCR MSCP. Each of these are described with additional detail and information as a part of each project's individual technical report.

3.1 Avian Monitoring

Single species surveys were conducted for the southwestern willow flycatcher and yellow-billed cuckoo as well as marsh birds. General avian surveys were conducted for six LCR MSCP avian covered species and all non-covered avian species, and a Monitoring Avian Productivity and Survivorship Station was operated.

3.1.1 Southwestern Willow Flycatcher Surveys

Restoration sites at Cibola NWR Unit 1 were surveyed five times during 2011. All birds were detected before June 15; therefore, they were considered to be migrants and are not considered to be the covered southwestern (*extimus*) subspecies.

- One willow flycatcher was detected on June 1 at Cibola Nature Trail and was considered a migrant. The site was surveyed five times, totaling 6.0 observer hours.

3.1.2 Yellow-billed Cuckoo Surveys

Yellow-billed cuckoo were detected at Crane Roost during all five survey periods, with the maximum number of detections (five) occurring during the fourth survey period. One cuckoo was detected during the second survey period at the Cibola Nature Trail, and two detections were made during the second survey period at Mass Planting. Only one cuckoo nest was found with three eggs in a honey mesquite (*Prosopis glandulosa*) within the older planted section of Crane Roost. The nest was abandoned a week after it was discovered.

3.1.3 General Avian Surveys

Surveys of habitat conservation areas with more than 2 years' growth were conducted using a double sampling area search method (rapid and intensive area searches) to determine their use for breeding by other LCR MSCP avian species. Details of the method and further results are found in Great Basin Bird Observatory (2011). Sonoran yellow warbler (*Dendroica petechia sonorana*) and Arizona Bell's vireo (*Vireo bellii arizonae*) were confirmed breeding in the Cibola Nature Trail (table 1). Yellow warblers that were classified as non-breeders were also detected at Crane Roost.

Table 1.—LCR MSCP avian species detected at the Cibola NWR Unit 1 Conservation Area in 2011

LCR MSCP covered species detected	Number of confirmed breeding pairs
Arizona Bell's vireo	2
Gila woodpecker	1
Sonoran yellow warbler	7
Willow flycatcher	0
Yellow-bird cuckoo	0

A total of 98 resident birds of 15 species were captured at a bird banding station. The Gila woodpecker was the only LCR MSCP species captured.

3.2 Small Mammal Monitoring

3.2.1 Bat Monitoring

Acoustic and capture survey methods were used to monitor and document the presence of bat species within Cibola NWR Unit 1 and to determine the age, sex, and reproductive status of the bats that could be captured.

3.2.1.1 Acoustic Surveys

Bat acoustic driving surveys were conducted in each of the habitat creation areas in May, July, and September to document the presence of bat species using the conservation area. No LCR MSCP species were detected. The acoustic driving surveys were discontinued after 2011 because they did not detect uncommon species; the acoustic detector was only in one location for a very short amount of time.

3.2.1.2 Capture Surveys

Bat capture surveys were conducted at the Cibola Nature Trail once a month from May –September to determine the age, sex, and reproductive status of bats captured in the conservation area. The California leaf-nosed bat was the only LCR MSCP species captured in 2011 (table 2).

Table 2.—Total captures at the Cibola Nature Trail from 2007–11

Species	2007	2008	2009	2010	2011
Western red bat	0	0	0	0	0
Western yellow bat	0	2	0	0	0
California leaf-nosed bat	14	4	4	5	8
Townsend's big-eared bat	0	0	0	0	0
All other species	5	31	162	58	62
Totals	19	37	166	63	70

3.2.2 Rodent Monitoring

Eighty-three Colorado River cotton rats were captured over 1,020 trap nights at the Cibola Nature Trail and Cottonwood Genetics sites within Cibola NWR Unit 1. Seven rodent species were captured (420 individuals). A trap night is calculated as one trap site out over a night. A total of 8 percent of the traps set out over night at Cibola NWR Unit 1 resulted in a Colorado River cotton rat capture.

4.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

4.1 Vegetation Monitoring

Vegetation data were collected within several parameters to evaluate the vegetation structure from the ground layer to the upper canopy layer. The parameters included tree and shrub density, tree heights, and canopy closure.

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In Cibola NWR Unit 1, the average tree density in cottonwood-willow (cottonwood, Goodding’s willow, and coyote willow) ranged from 79–3,884 trees per acre. The average shrub (baccharis) density was 34 shrubs per acre. Cottonwood, Goodding’s willow, and mesquite tree height average ranges were from approximately 20 to 43 feet. The average canopy closure ranged from 66–100 percent.

4.2 Evaluation of Cibola NWR Unit 1

The Final Habitat Creation Conservation Measure Accomplishment Tracking Process was finalized in October 2011 (Reclamation 2011). All areas within Cibola NWR Unit 1 were designed to benefit covered species at the landscape level.

To meet species habitat creation requirements, the HCP provides goals for habitat creation based on land cover types. These land cover types are described using the Anderson and Ohmart vegetation classification system (Anderson and Ohmart 1976, 1984a, 1984b). In 2011, Cibola NWR Unit 1 supported 74 acres of cottonwood-willow structure type I, 80 acres of cottonwood-willow structure type II, and 116 acres of cottonwood-willow structure type IV. Nine species with habitat creation goals have creditable acres at Cibola NWR Unit 1. Table 3 shows how much habitat has been created for each of the targeted covered species at Cibola NWR Unit 1. These species (including their corresponding conservation measure acronym) are: western red bat (WRBA2), yellow-billed cuckoo (YBCU1), elf owl (ELOW1), gilded flicker (GIFL1), Gila woodpecker (GIWO1), vermilion flycatcher (VEFL1), Arizona Bell’s vireo (BEV1), Sonoran yellow warbler (YWAR1), and summer tanager (SUTA1).

Table 3.—Species-specific habitat creation conservation measure creditable total acres for 2011

Species-specific habitat creation conservation measure	WIFL1 ¹	WRBA2	WYBA3 ²	CRCR3 ³	YBCU1	ELOW1	GIFL1	GIWO1	VEFL1	BEV1	YWAR1	SUTA1
Creditable acres in 2011	0	154	0	0	154	154	154	270	270	116	270	154

¹ Although Cibola NWR Unit 1 provides the appropriate structure type (cottonwood-willow I–IV) as defined in WIFL1 of the HCP, Reclamation is in the process of gathering the appropriate hydrologic data to determine saturated soils, moist soils, or slow-moving water. Once this has been determined, Cibola NWR Unit 1 will be evaluated.

² Reclamation is in the process of determining foraging and roosting habitat for the western yellow bat. Once this has been determined, Cibola NWR Unit 1 will be evaluated.

³ The preliminary data suggest the Colorado River cotton rat uses both cottonwood-willow and fringe marsh habitats. Reclamation is in the process of evaluating data collected to determine marsh and cottonwood-willow habitat uses by this species.

5.0 ADAPTIVE MANAGEMENT RECOMMENDATIONS

Adaptive management relies on the initial receipt of new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (Reclamation 2007a). Under the Adaptive Management Program, habitat creation sites will be assessed for biological effectiveness and whether they fulfill the conservation measures outlined in the Habitat Conservation Plan for 26 covered species and potentially benefit 5 evaluation species. Post-development monitoring and species research results will be used to adaptively manage habitat creation sites after initial implementation. Once monitoring data are collected over a few years, and then analyzed for Cibola NWR Unit 1, recommendations may be made through the adaptive management process for site improvements in the future.

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